

Getting the best from PowerPoint: 2 and 3-dimensional animations

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The following discussion and examples of animation techniques within PowerPoint follows on directly from the article 'Getting the best from PowerPoint: 2 and 3-dimensional animations' that was published in the last edition of [Blended Learning in Practice](#), pages 20 to 27. In that article I discussed basic animation of text and graphical objects and introduced the use of three-dimensional objects to add extra impact to PowerPoint presentations. The key benefits of utilising PowerPoint animations were discussed in detail in the June issue of Blended Learning in Practice, but to summarise, one of the key benefits of these techniques is to aid in the explanation of complex concepts and clearly animations are likely to be of particular use to visual learners.

In this edition of Blended Learning in Practice I will again use examples from my own teaching (glaciology and physical geography) to illustrate a variety of animation techniques, with an emphasis on some of the more subtle controls that can be employed to 'force' PowerPoint to produce the effects we desire. Although the examples relate to a specific subject area, the techniques can be deployed to a limitless number of topics and subject areas, and the overview animation (see below) provides a non-subject specific example of several techniques covered in this issue of Blended Learning in Practice.

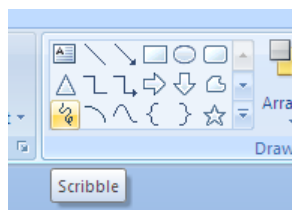
Each of the slides below can be viewed in animated form by clicking on the multi-media icon.

An overview of all the techniques discussed and a step-by-step guide to producing an animation using a variety of the techniques discussed can be seen by clicking on this multi-media icon.



Adding rotational motion

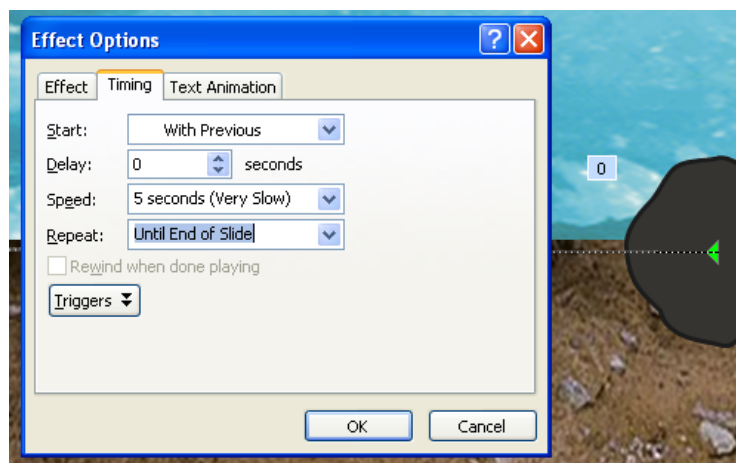
This slide is a development of one that I demonstrated in the previous issue of Blended Learning in Practice (page 23). It shows a glacier moving across its bed from right to left, while trapped in the glacier ice are two clasts or pieces of rock that are rotated as the glacier moves. The blue glacier ice is a close up crop of a photograph, as is the subglacial sediment. The clasts are drawn using the 'scribble' tool from the PowerPoint drawing menu as shown below.



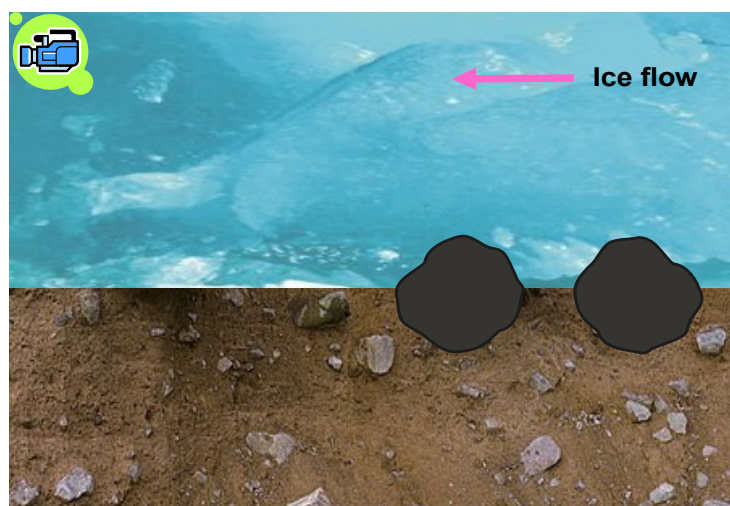
The image of the glacier ice is moved along a linear motion path from right left and at the same time the clasts also move from right to left and rotate using the 'spin' effect available in the custom animation menu of Powerpoint.

It might at first glance appear that this is a simple matter of grouping all the moving objects together as one object and moving them on a linear motion path from right to left. However, because we want our clasts to also spin as they move from left to right, we can't do this. Grouping will mean that PowerPoint will treat all the objects (glacier ice, pink arrow, text and clasts) as one object and if we tried to apply the 'spin' effect, PowerPoint would apply this effect to all objects in the group simultaneously, which would obviously not give us the effect we desire! We therefore have to move and spin our sub-elements (i.e. the clasts) separately and ensure that they move from left to right at the same speed (or as close as possible) as the blue glacier ice moves.

To enable this we need to pay attention to the specific timings of the animation. Firstly, the clasts need to be set to spin simultaneously. This is simply a matter of applying the spin effect and ensuring that the second clast is set to spin 'with previous' in the custom animation menu as shown below.



We must ensure that we select 'repeat until end of slide' in the options box associated with the spin effect; if we don't, the clasts may stop spinning before they reach the left hand edge of the slide. Then, linear motion paths can be applied to each clast separately and again, the second clast is set to move 'with previous'. We can't apply one motion path to both clasts because of the same grouping problems discussed earlier.



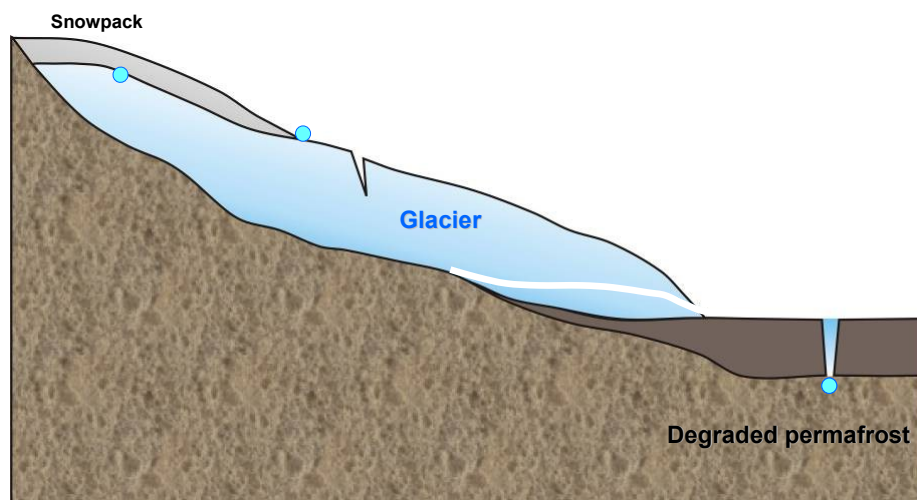
The next task is then to ensure that the clasts move right to left at the same speed (or as close as possible) as the blue glacier ice, pink arrow and associated text. When timings are set for animations in PowerPoint the default timing for 'very slow' is 5 seconds. Clearly for this animation we need something more akin to glacial speed! If you right-click on the relevant effect in the custom animation list that appears on the right hand side of the screen in PowerPoint you will see that the option 'Show advanced timeline' appears. You are then able to drag the slider right and left to set the desired end timing; in this example I chose 10 seconds for all left to right motion paths. Full details of the creation of the above slide can be found by accessing the multi-media icon.

Making elements enter and exit

The slide below shows meltwater flowpaths within and beneath an Arctic glacier. This slide was discussed in general terms in the last issue of Blended Learning in Practice (page 26). The slide contains multiple elements that enter, move and exit. Two full-screen photographs also enter and exit. In total there are nine elements that enter, move and exit, often at different speeds and this requires the timing of each effect to be tightly controlled to avoid chaos! The 'with previous', 'after previous', 'repeat until end of slide' options, together with use of the advanced timeline allow this control to be applied and the slide to run in a controlled and correct sequence.



Meltwater flowpaths



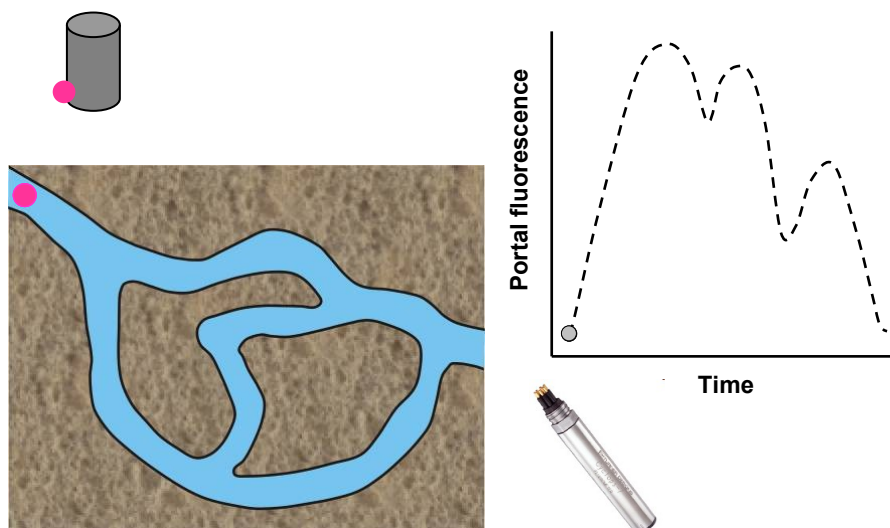
Mixing two and three-dimensional objects

The slide below makes use of animation of two- and three-dimensional objects and entrance and exit of an image, to illustrate the practice of dye-tracing whereby fluorescent dye is poured into channels at the base of a glacier and the return of dye at the front of

the glacier monitored using a fluorometer. To add a visual prompt I include an image of the fluorometer at the base of the slide. Again, this slide is rather more complex than the examples I presented in the last issue of *Blended Learning in Practice*. The three-dimensional 'bucket' has to enter; pour and exit; the image of dye being poured in the field has to enter and exit; the dye parcels have to split and flow in three different directions; they also fade from dark to light pink to illustrate dilution effects and three markers on the graph have to follow three different motion paths.



Interpreting dye returns



Enlarging and shrinking

Another useful and very simple animation technique is the ability to 'grow' and 'shrink' objects. This can be used to add emphasis and in the example below I am using these functions to 'grow' and 'shrink' a meltwater passage at the base of a glacier. This illustrates to students the competitive processes of frictional heat generation from flowing meltwater (that will tend to enlarge the passage) and creep closure from ice deformation (that will tend to reduce the size of the passage). The slide could be further enhanced with the addition of labels or annotated text and perhaps even symbols to denote summer (when the passage will grow) and winter (when the passage will shrink). The overview animation at the start of this article shows how to use the enter and exit functions for these types of graphical symbols.



Concluding remarks

It would be impossible to demonstrate all the animation techniques within PowerPoint in just two articles (there are over 50 entrance options alone!). However, I hope that this overview of some of the more commonly used animations demonstrates just how powerful these techniques can be to enhance the visual elements of our teaching and assist in the explanation of complex concepts. As discussed in the previous issue of *Blended Learning in Practice*, once the basics have been learned, these techniques are quick to implement and can be used on any computer that has the PowerPoint package installed. My own experience is that students engage with on-screen animations in a very positive way and this, combined with the enhanced explanatory power that animations can provide, makes their use a powerful educational tool.